

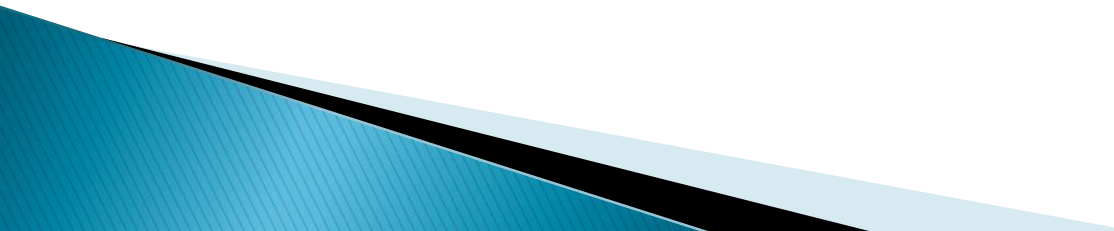


An Ounce of Prevention

Is Worth a Pound of Cure

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Liane Vadheim, RD, CDE – Holy Rosary Healthcare – Miles City

Overview

- ▶ Burden of Diabetes in Montana
 - ▶ What is Montana doing to reduce the risk?
 - ▶ Cardiovascular Disease and Diabetes Prevention Program
- 

What is obesity?

- ▶ Body Mass Index (BMI) calculated from a person's height and weight
- ▶ **BMI Ranges**
 - Underweight <18.5
 - Normal $18.5 - 24.9$
 - Overweight 25.0 to <29.9
 - Obese ≥ 30.0



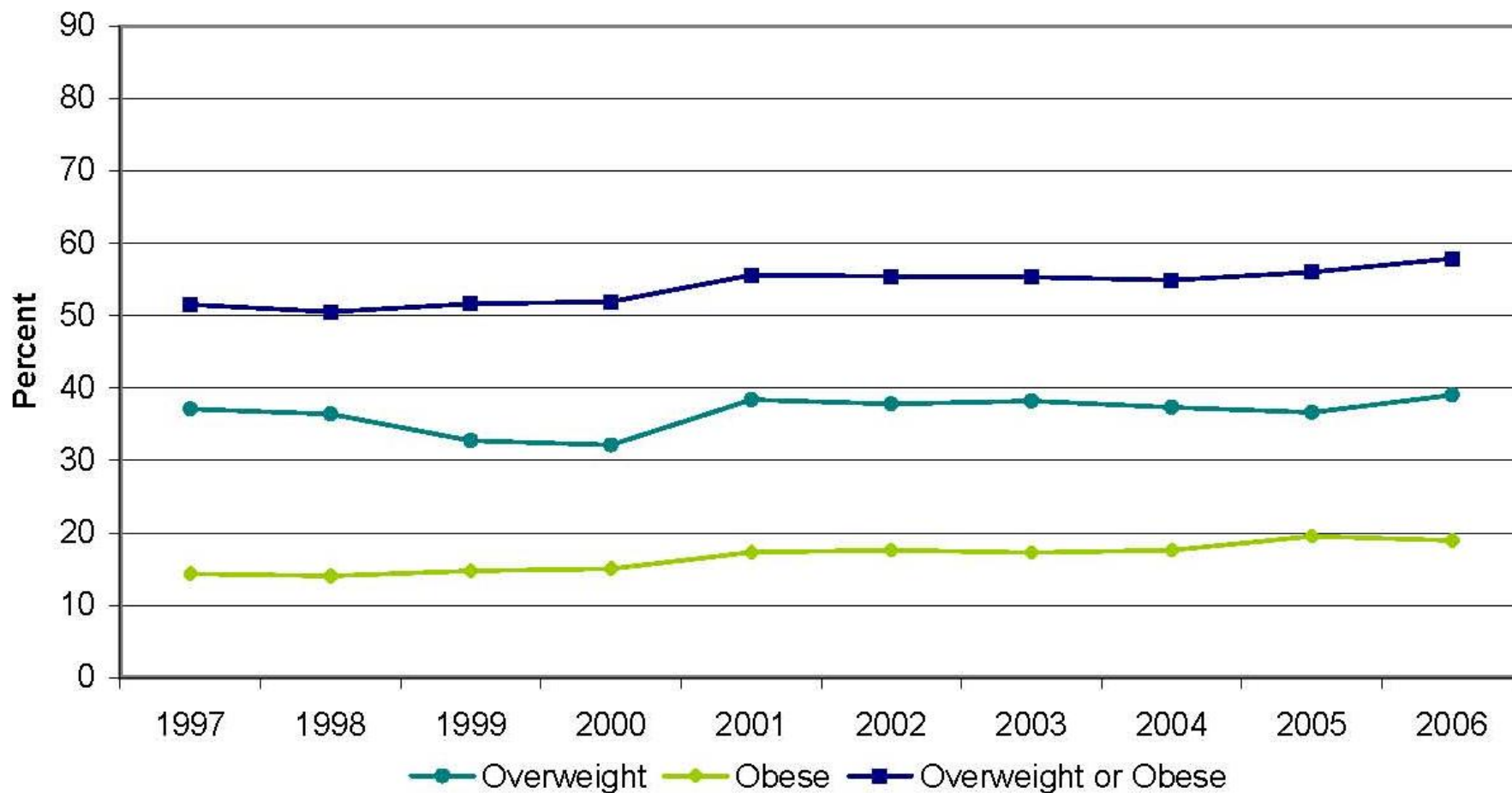
At Risk Weight

- ▶ Body Mass Index
> 25

Height	Weight
4'10"	119
4'11"	124
5'0"	128
5'1"	132
5'2"	136
5'3"	141
5'4"	145
5'5"	150
5'6"	155

5'7"	159
5'8"	164
5'9"	169
5'10"	174
5'11"	179
6'0"	184
6'1"	189
6'2"	194
6'3"	200
6'4"	205

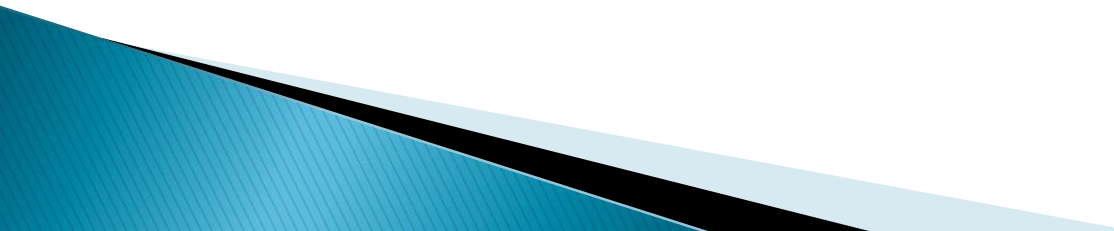
Prevalence of overweight* and obesity** among Montanans without diabetes, 1997 to 2006



*25.0kg/m² ≤ BMI <30.0kg/m² ** BMI ≥ 30.0kg/m²

Data source: Montana BRFSS, Montana DPHHS, Health Planning Section, 1997-2006.


Definitions

- ▶ Diabetes – Fasting BG > 125
on two occasions
 - ▶ Pre-Diabetes – Fasting BG 100 – 125
 - ▶ Normal – Fasting BG < 100
- 

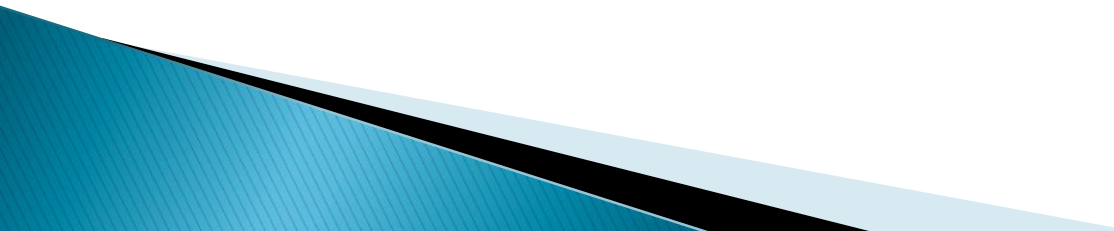
According to the American Diabetes Association

- ▶ Diabetes is the fifth leading cause of death in the US
- ▶ People with diabetes are at higher risk for:
 - heart disease
 - stroke
 - blindness
 - kidney failure
 - extremity amputation
 - nervous system damage
 - and more

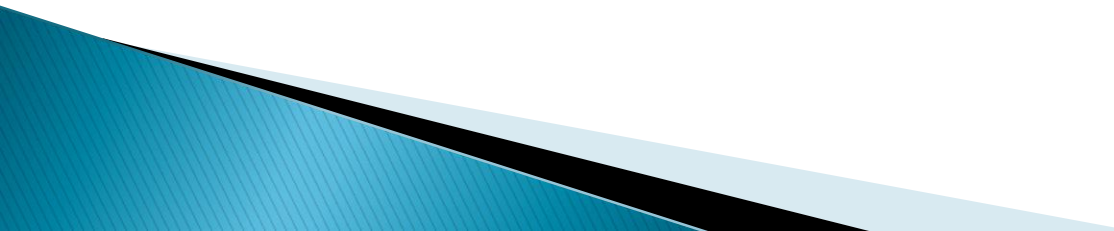
A Growing Epidemic

- ▶ Nearly 26 (23.6 in 2008) million Americans have diabetes
 - ▶ 79 (57) million American adults have pre-diabetes
 - ▶ Diabetics spend about twice as much on health care
 - ▶ 67% of American adults are overweight or obese
 - ▶ Obesity is a major risk factor for diabetes
 - ▶ 90% of people diagnosed with type 2 diabetes are overweight
 - ▶ 300,000 deaths each year in the U.S. are associated with obesity
- 

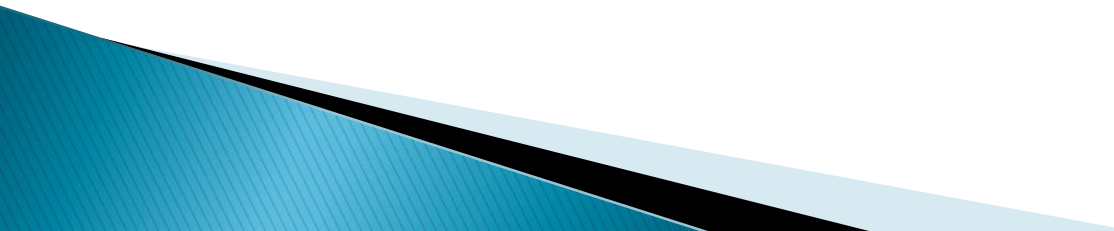
The Burden of Diabetes in Montana

- ▶ The prevalence of diabetes in Montana, as well as the U.S., has continued to increase
 - ▶ The most recent data from 2006 shows that 48,000 Montanans (6.4% of the population) reported having diabetes
 - ▶ The prevalence of diabetes has increased from 2.8% in 1990.
 - ▶ A little over 8% of deaths in Montana are related to diabetes.
 - ▶ In 2008, Montana's obesity rate (BMI >30) was 23.9% of adults. 57% were overweight (BMI>25)
- 

The Burden of Diabetes, cont'd

- ▶ Diabetes is a chronic disease with no cure
 - ▶ Diabetes and pre-diabetes can be controlled through lifestyle changes and behavior modification
 - ▶ Approximately 175,910 Montanans aged 18–64 years old have pre-diabetes
- 

The Diabetes Prevention Program (DPP)

- ▶ The DPP was a national research trial.
 - ▶ The Goal of the DPP was to prevent or delay the onset of type 2 diabetes in participants with pre-diabetes.
 - ▶ DPP Secondary Goals: Reduce CVD events, Reduce CVD risk factors, Reduce atherosclerosis
- 

DPP Results

- ▶ The DPP intensive lifestyle intervention clinical trial:
 - Reduced Diabetes incidence by 58%¹
 - Decreased Cardiometabolic risk factors²
 - Hypertension, Triglycerides, ↓LDL (bad cholesterol), ↑HDL (good cholesterol)

¹ New England Journal of Medicine Vol.346, No.6, February 7,2002

² Diabetes Care, Volume 28, number 4, April 2005

³ Annals of Internal Medicine, Volume 142, Number 8, April 19, 2005

What is Montana doing to reduce the risks?

- ▶ Montana Cardiovascular Disease and Diabetes Prevention Program received funding through the State Legislature to implement the Diabetes Prevention Program.



Montana Cardiovascular and Diabetes Prevention Program

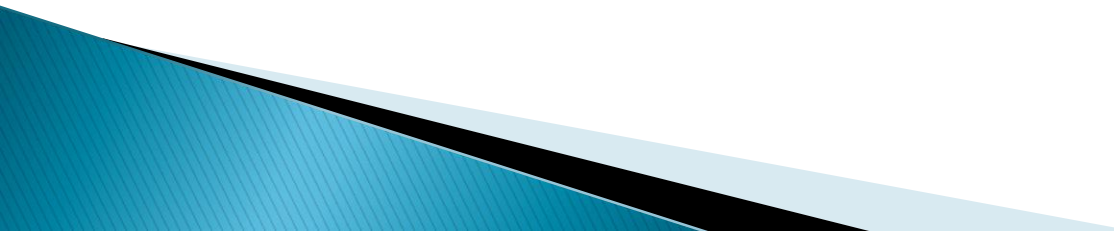
- ▶ The Montana Diabetes Prevention Program began in January 2008 with the goal to prevent type 2 diabetes and cardiovascular disease among Montanans who are at high risk.



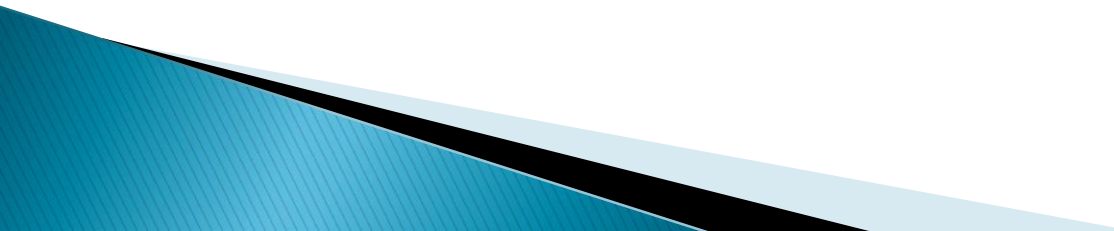
Eligibility

- ▶ BMI > 25 plus
- ▶ At least one more risk for developing diabetes or heart disease
 - Fasting blood sugar 101–125
 - Hgb A1C 5.7% – 6.4%
 - Gave birth to baby \geq 9 pounds
 - Hx Gestational diabetes
 - High Blood Pressure \geq 130/85 or on meds
 - High Triglycerides \geq 150
 - High LDL \geq 130
 - Low HDL \leq 40 men, \leq 50 women
 - Taking cholesterol medications

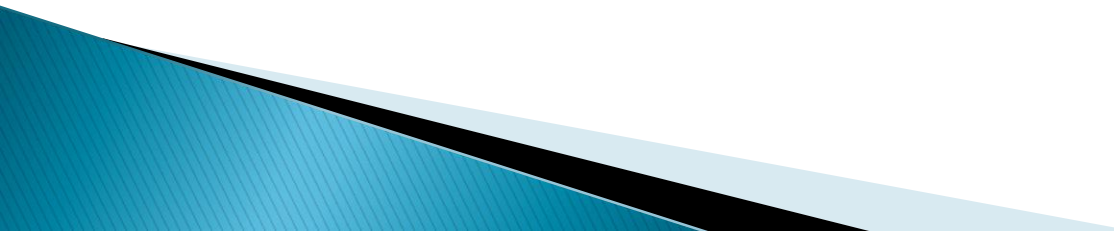
Eligibility

- ▶ Participants must be at least 18 years old
 - ▶ Need physician referral
 - ▶ Must be able to walk 2 blocks in < 20 min.
 - ▶ No diagnosis of diabetes or unstable heart disease
 - ▶ Not planning pregnancy within the next 6 months
 - ▶ **READY TO CHANGE DIET AND PHYSICAL ACTIVITY**
- 

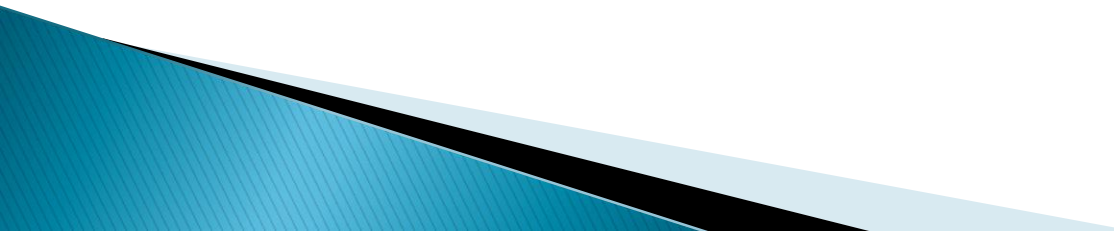
Original DPP Sites in Montana

- ▶ Community Medical Center–Missoula
 - ▶ St. Peter's Hospital–Helena
 - ▶ St. Vincent's Hospital with YMCA–Billings
 - ▶ Holy Rosary Healthcare–Miles City
- 

Sites Added in 2009

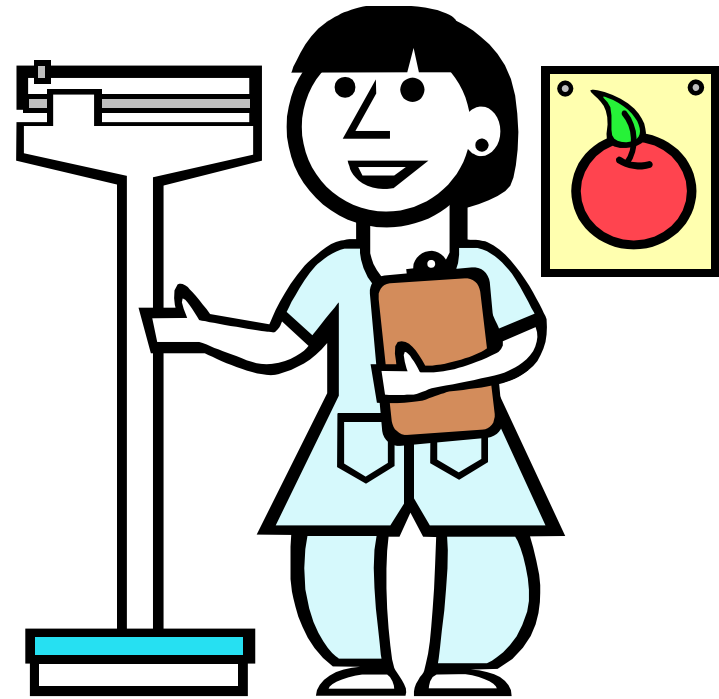
- ▶ Kalispell Regional Medical Center–Kalispell
 - ▶ Barrett Hospital & Healthcare–Dillon
 - ▶ Benefis Health System–Great Falls
 - ▶ Billings Clinic–Billings
- 

Sites added in 2011

- ▶ Bozeman Deaconess Hospital – Bozeman
 - ▶ Butte Diabetes Network – Butte
 - ▶ Missoula City/County Health Department – Missoula
 - ▶ St. John's Lutheran Hospital – Libby
 - ▶ St. Patrick Hospital – Missoula
 - ▶ Teton Medical Center – Choteau
- 

Staffing for Prevention Program

- ▶ Dietary Component
 - Dietitian
- ▶ Exercise Component
 - Exercise Physiologist
 - Exercise Specialist
 - Physical Therapist
- ▶ Other Staff
 - Nurse
 - Secretarial/Support
 - Psychologist
 - Social Worker



Lifestyle Intervention

An intensive program with the following specific goals:


- **$\geq 7\%$ loss of body weight and maintenance of weight loss**

Target fat grams & calories based on original weight

- **Dietary fat goal -- $<25\%$ of calories from fat**
- **Calorie intake goal -- 1200-2000 kcal/day**

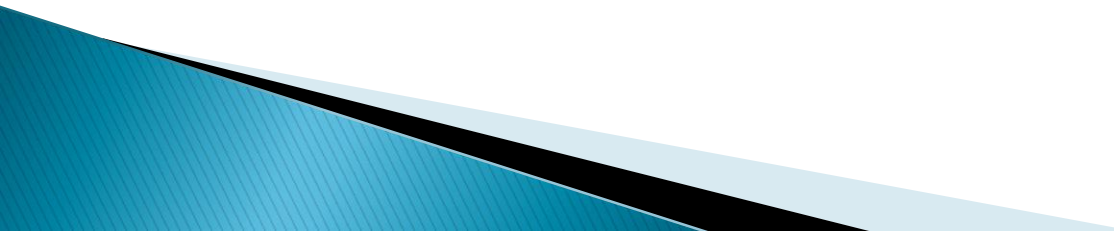
- **≥ 150 minutes per week of physical activity**

Commitment

- ▶ Attend 16 weekly education sessions on eating healthy, exercise, problem solving and coping skills
 - ▶ Gradually increase physical activity to at least 150 min/week
 - ▶ Keep logs of food and exercise with booklets provided
 - ▶ Track fat grams eaten
 - ▶ Attend 6 monthly sessions after completion of 1st 16 weekly sessions.
 - ▶ Have cholesterol and fasting glucose checked before starting, after 16 weeks, and at end of year.
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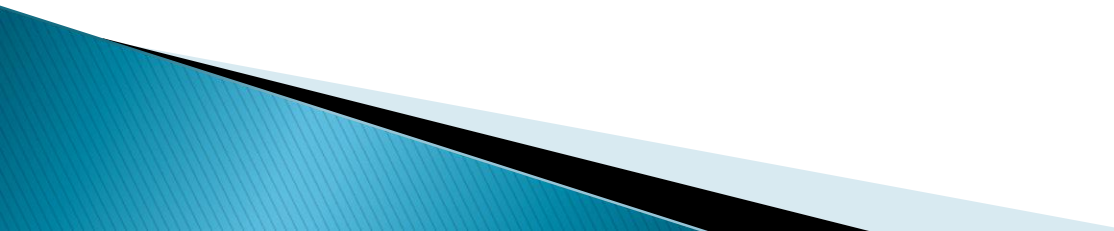
Data Collection

Initial Data:

- ▶ Age
 - ▶ Gender
 - ▶ Height/Weight
 - ▶ Blood Pressure
 - ▶ Smoking Status
 - ▶ Medications for lipid control or hypertension
 - ▶ Labs (BG, Cholesterol, HDL, LDL, Triglycerides)
 - ▶ History of gestational or parental diabetes
- 

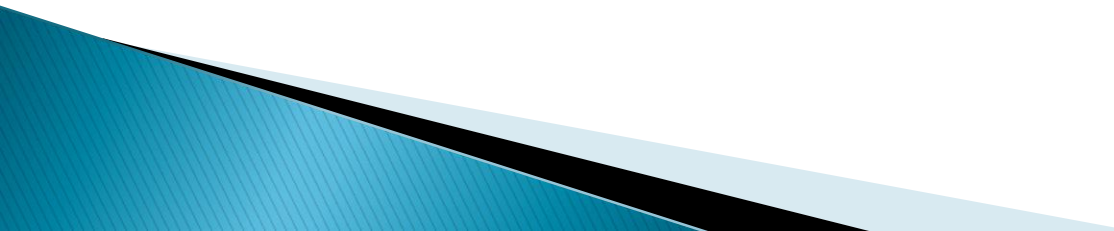
Data Collection

At Each Session – weekly for 16 weeks and monthly for 6 more months

- ▶ Weight
 - ▶ Monitoring of fat grams and average
 - ▶ Monitoring of calories and average
 - ▶ Self monitoring of weight
 - ▶ Days of exercise and total weekly minutes
- 

Data Collection

Mid and Post Assessments

- ▶ Weight
 - ▶ Blood Pressure
 - ▶ Labs (BG, Total Cholesterol, HDL, LDL, Triglycerides)
 - ▶ Any change in smoking status
 - ▶ Any change in lipid or hypertensive meds
 - ▶ Goal setting
- 

Average Pounds Lost by Participants by Behavior Combination

How often do you monitor your fat grams?

**Monitor Fat Grams
4 of 7 days/week or
more:**

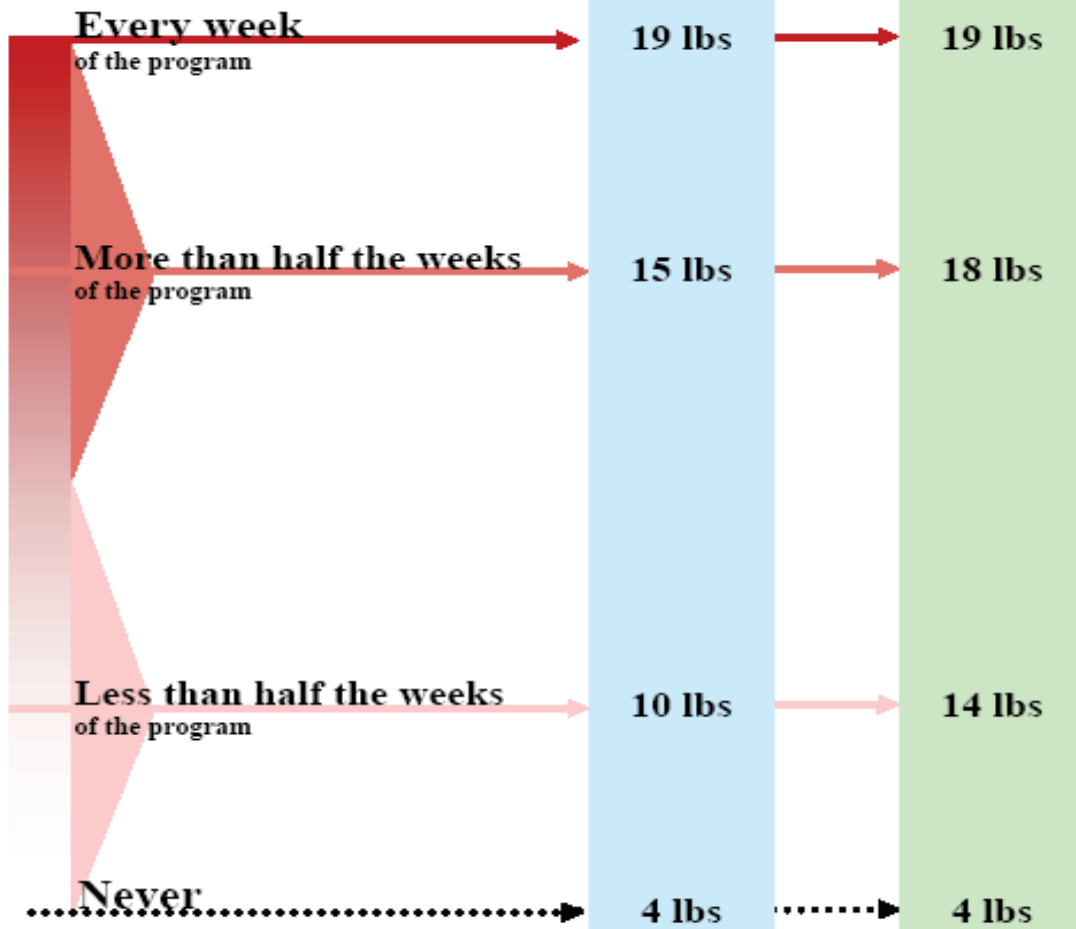
AND

How many minutes per week do you exercise?

**Exercise
150 to 299
min/week**

OR

**Exercise
300 +
min/week**



Montana's Program Results

- ▶ In the DPP, 58% decrease in development of diabetes with Lifestyle Intervention
 - (71% decrease for those over age 60)
- ▶ In Montana, 81% completed the core and 58% completed the entire program
- ▶ 45 to 50% of participants accomplished $\geq 7\%$ weight loss– average 15#, range 0–80#.
- ▶ Conclusions: “It is feasible for state–coordinated CVD and diabetes prevention programs to achieve significant weight loss and improve cardiometabolic risk.” *Diabetes Care 33:2543–2545, 2010*

Since the Montana program began in January 2008

Improvements in:

- Blood glucose levels
- Blood pressure
- LDL (bad cholesterol)
- Triglycerides
- Total cholesterol
- Increased physical activity

Changes equivalent to 1 medication



Results to Date: It's been a wild ride!

- ▶ Decreased risk factors
- ▶ The ripple effect
- ▶ Support groups
- ▶ Publications
- ▶ Spreading the word
- ▶ Master Trainer program



Healthy Eating Component

- ▶ “Keeping Track” self monitoring w/feedback
- ▶ Tracking and limiting fat grams
- ▶ Encouragement to include nutrient dense foods, choose small amounts of “healthy fats”, increase fiber sources, limit excess sodium, alcohol, and simple sugars
- ▶ Optional tracking and limiting of calories



Additional Topics

- ▶ Social Cues
- ▶ Problem Solving
- ▶ Stress Management
- ▶ Mindless Eating

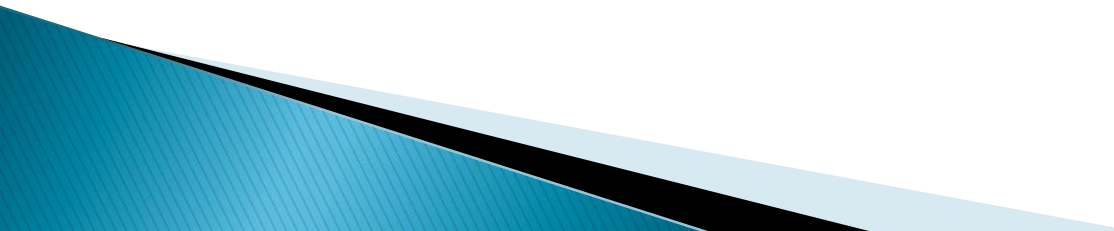


More Topics

- ▶ Eating Out
- ▶ Taking Charge
- ▶ Staying Motivated



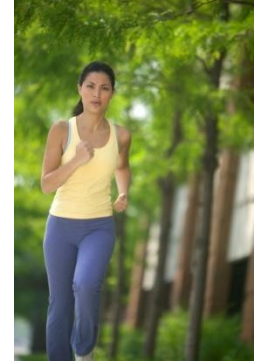
Physical Activity

- ▶ Physical Activity has positive results in people with diabetes or pre-diabetes
 - ▶ Improves blood glucose and lipid levels
 - ▶ Lowers blood pressure
 - ▶ Reduces weight
 - ▶ Increases insulin sensitivity and efficiency
 - ▶ 30 minutes of physical activity per day is recommended or at least 150 minutes per week
- 

How to Increase Physical Activity

Individualized

- ▶ Individual Activity
- ▶ Activity with a Partner
- ▶ Group Classes
- ▶ Pedometers
- ▶ Helping those with difficulty



Physical Activity Results

- ▶ 70% averaged at least 150 min/week throughout the program
- ▶ 74% of participants accomplished ≥ 150 min. of exercise/wk – average 285 min./week!



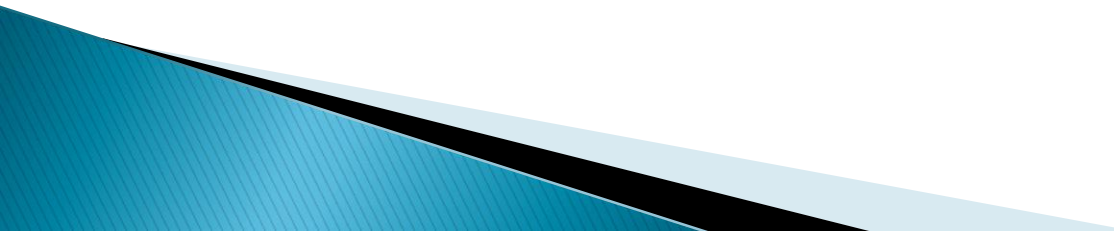
Participant Evaluations



- ▶ Thank you for all of your wonderful lessons. I feel like a new person, and I can do so many more things now and I am so thankful for you ladies.
- ▶ Liked the interaction of class – between group attendees and speakers. I really thought this was a dynamite program! Thanks!

“This program has made a HUGE difference in my life. When I started I couldn’t walk to the corner without feeling like I needed to sit down and rest. Now I can walk around the lake in Lolo twice a day and still want to go for a walk after dinner. My blood pressure is lower than it has been in 15 years. My clothes are in need of some replacements – none of my summer pants fit – way too big now. My attitude toward food has changed. I’ve found ways to cook old favorites in a much healthier way. And who knew I could live without Pepsi? I’m so glad I’ve been part of the program! Life is good!.”

Incorporating Ideas into Cardiac Rehab

- ▶ Patient Tracking
 - ▶ Weekly weight
 - Aim for 7% decrease
 - ▶ Writing down ALL foods eaten during day
 - Usually writing quantities down is adequate
 - As necessary track fat grams, carbs, sodium
 - ▶ Recording exercise
 - Minutes
 - Steps
 - Distance
- 

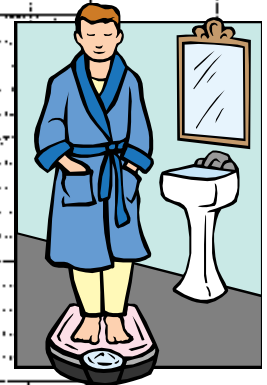
How Am I Doing?

Starting Weight (lbs.) =

7% Weight Loss Goal (lbs.) =

Weekly Weight Record

Weight
(pounds)



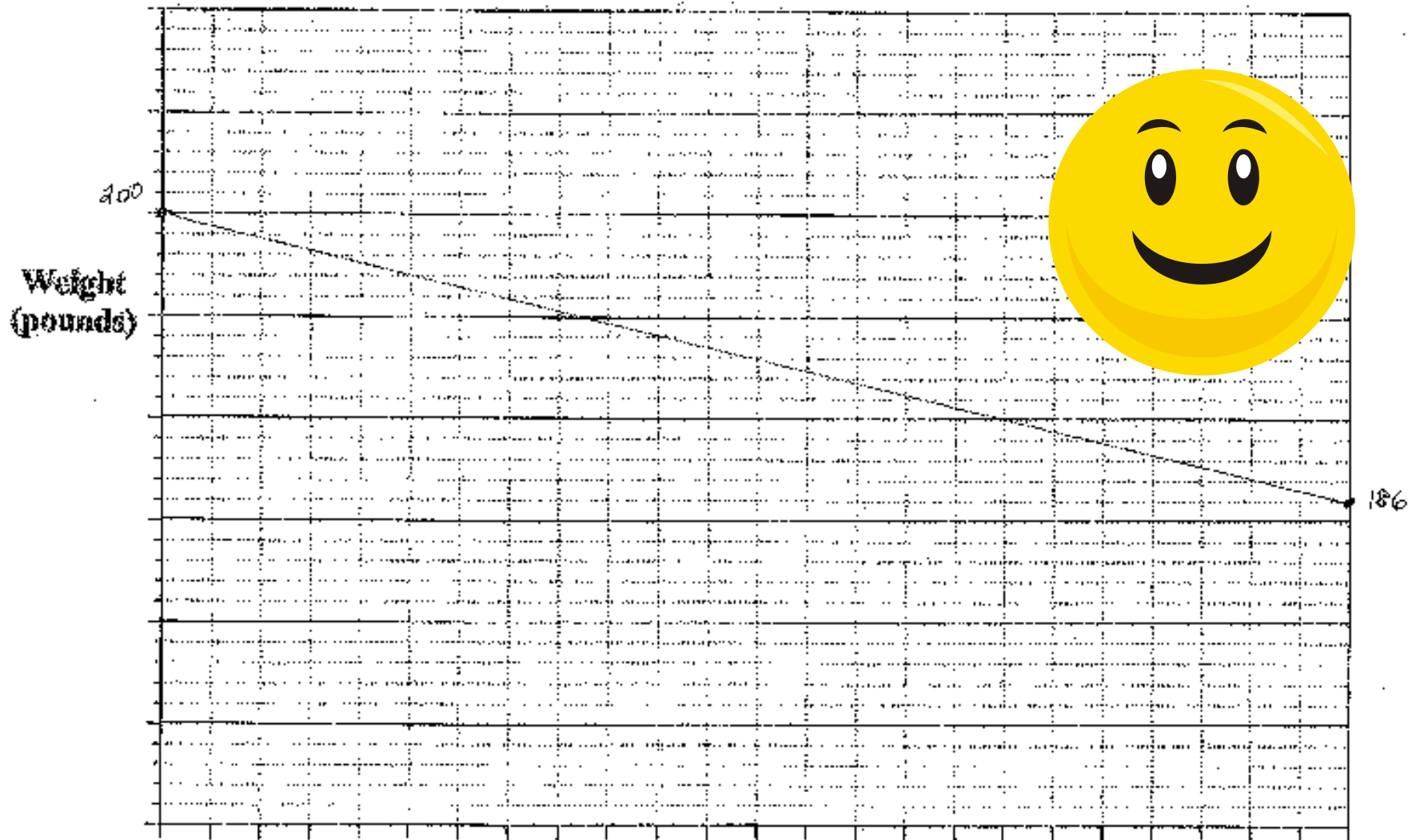
Date:

How Am I Doing?

Weekly Weight Record

Starting Weight (lbs.) = 200

7% Weight Loss Goal (lbs.) = 186

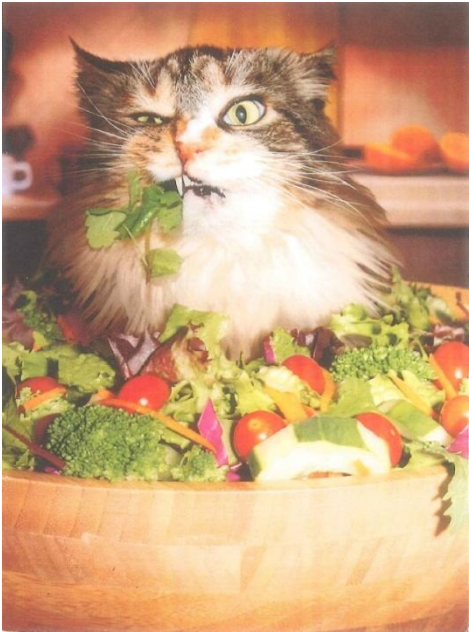


Date:

Breakfast			Lunch			Dinner		
Time	Food	Amt.	Time	Food	Amt.	Time	Food	Amt.
Morning Snacks			Afternoon Snacks			Evening Snacks		
Time	Food	Amt.	Time	Food	Amt.	Time	Food	Amt.

Day: _____ Comments:

Date: __/__/____



DPP Lifestyle Balance

Name: _____

Goals: Weight _____ pounds.

Activity _____ minutes per week. (Month Year)



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Totals
Activity _____ Weight _____ <input type="checkbox"/> Recorded diet	Activity _____ Weight _____ <input type="checkbox"/> Recorded diet	Activity _____ Weight _____ <input type="checkbox"/> Recorded diet	Activity _____ Weight _____ <input type="checkbox"/> Recorded diet	Activity _____ Weight _____ <input type="checkbox"/> Recorded diet	Activity _____ Weight _____ <input type="checkbox"/> Recorded diet	Activity _____ Weight _____ <input type="checkbox"/> Recorded diet	Weekly Activity _____ minutes
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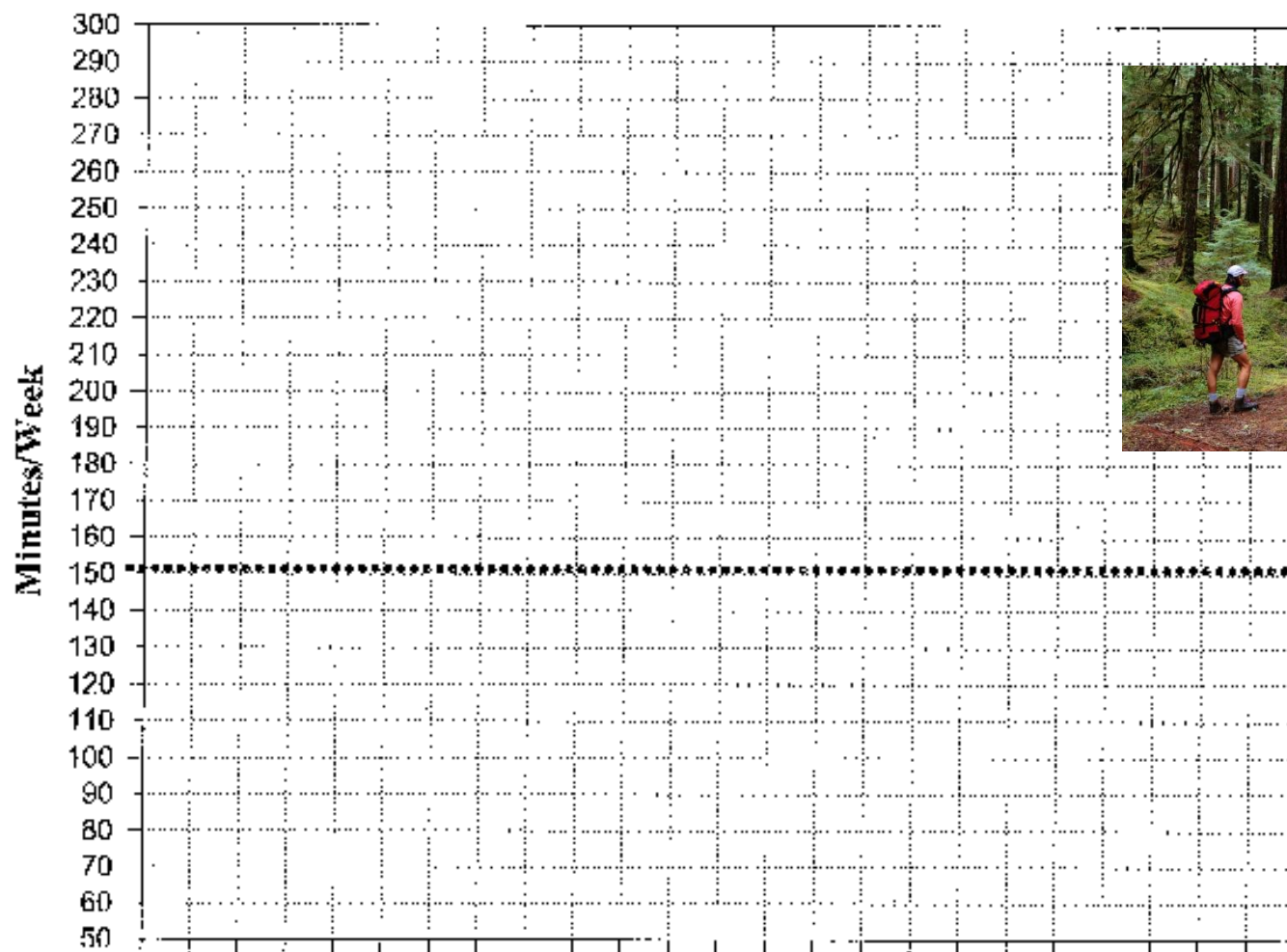


How Am I Doing?

Physical Activity Graph for _____

Starting Level (min./wk.) = _____

Minimum Goal (min./wk.) = 150



*Minimum
Activity
Goal*

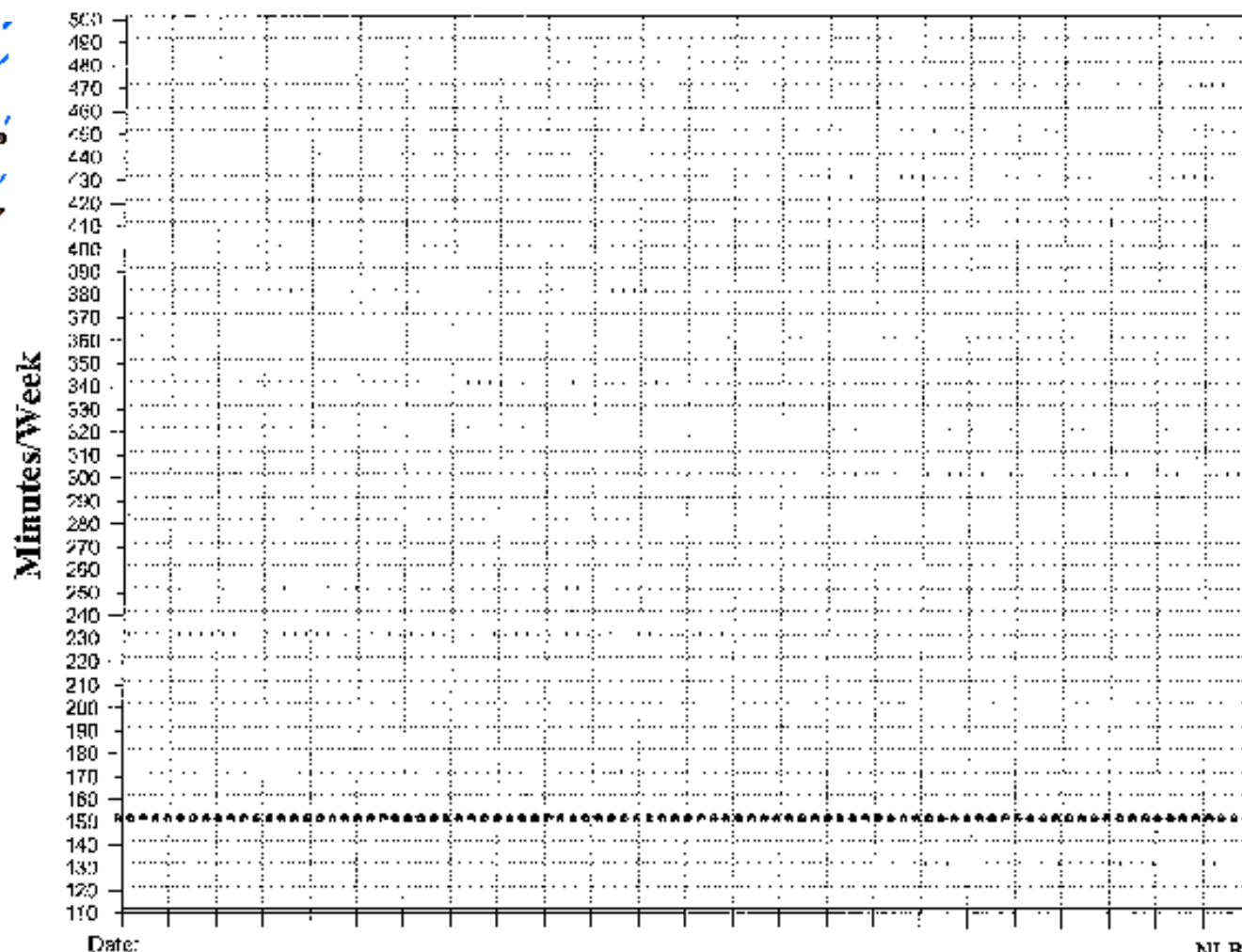
Date: _____

How Am I Doing?

Physical Activity Graph for _____

Starting Level (min./wk.) = _____

Minimum Goal (min./wk.) = 150



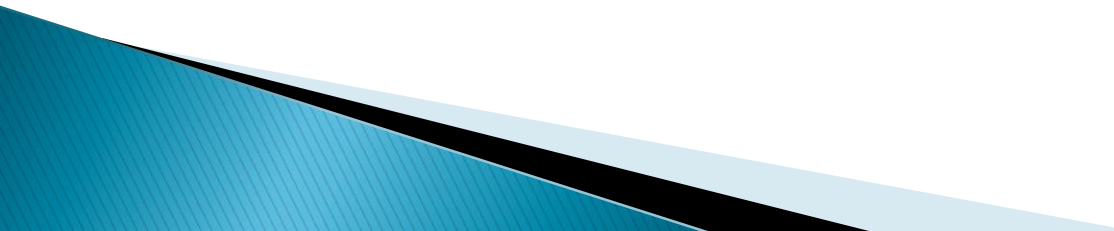
Outreach Applications

- ▶ Telemed sites
- ▶ Baker Fall 2009 and Fall 2010
- ▶ Colstrip–Spring 2010 (24) and Spring 2011(31)
- ▶ Forsyth – Fall 2010 (15) and Spring 2011(16)



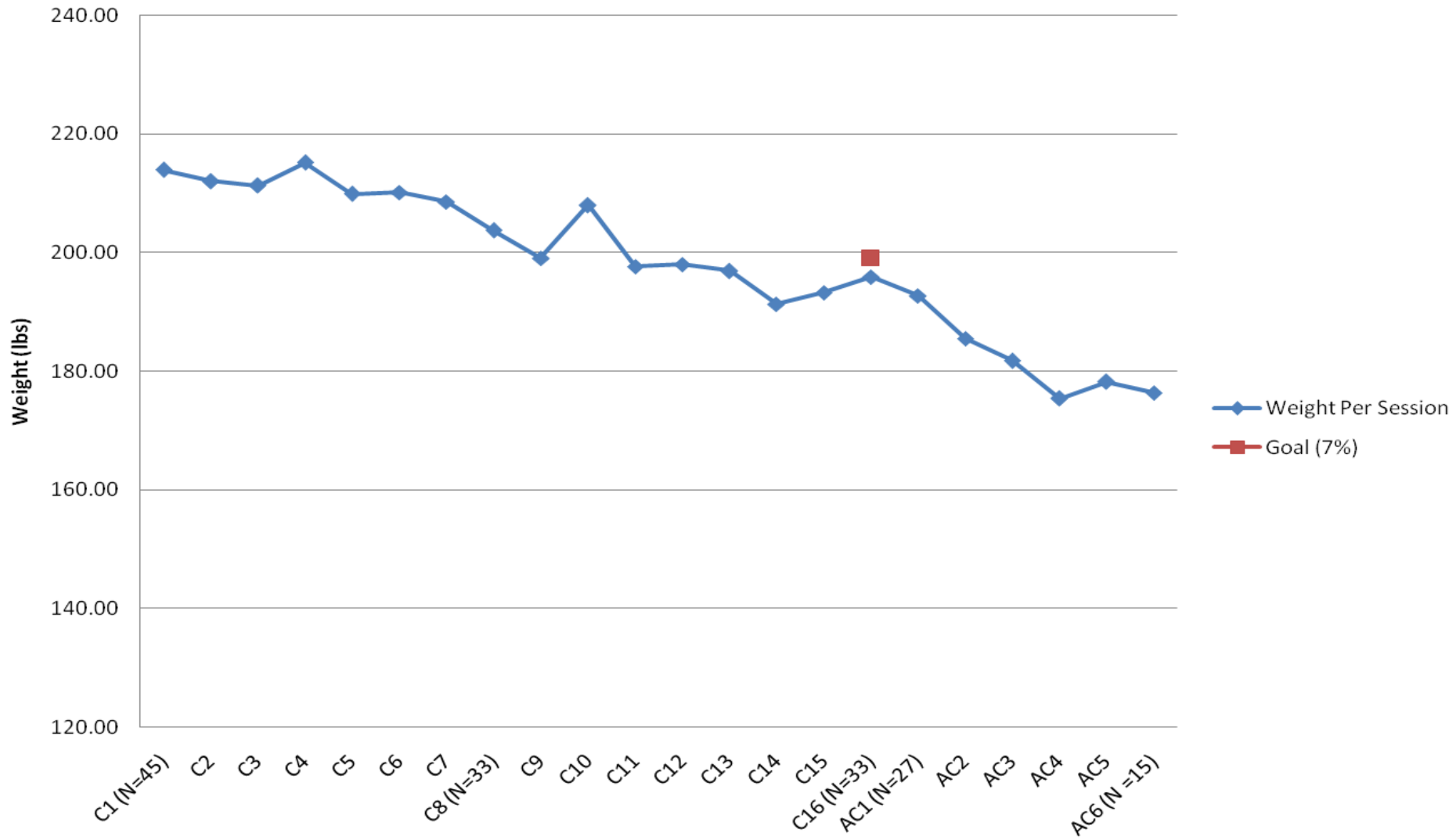
Discovery Visits the Space Station
2011 March 1

Methods

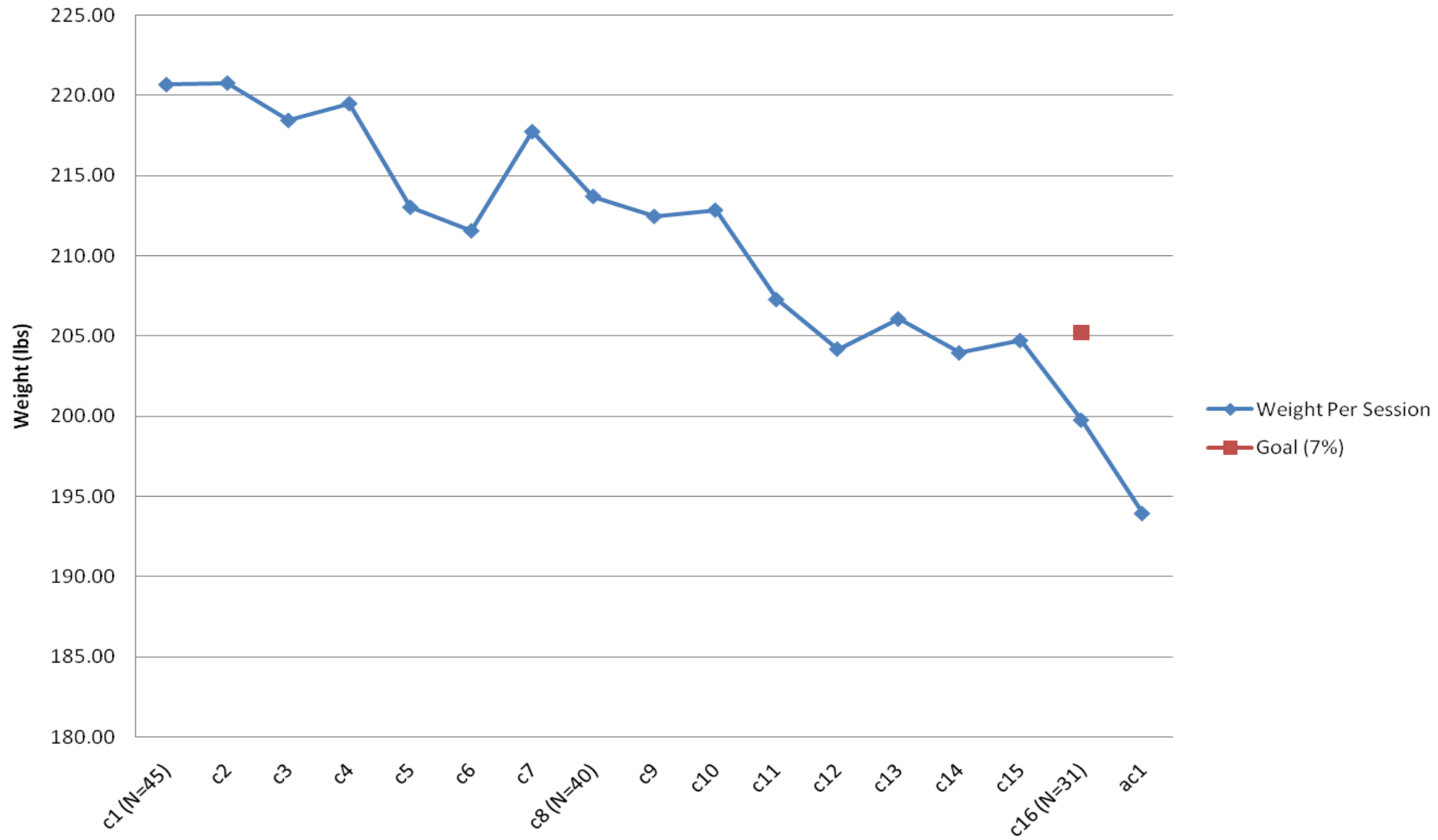
- ▶ Onsite pre, mid and post assessments
 - ▶ Initial “in person” introductory class
 - ▶ Local site coordinator to organize class, do weigh-ins, and distribute materials
 - ▶ Weekly and monthly classes delivered via telehealth
 - ▶ “Keeping Track” booklets exchanged each week via mail as well as any handouts
 - ▶ Exercise options individualized to site
- 

	Spring 2010	Fall 2010
	# enrolled	#enrolled
Miles City	46	49
Telehealth	24 (Colstrip)	40 (Baker & Forsyth)
	Average Intake Wt	Average Intake Wt
Miles City	215.77	223.45
Telehealth	222.56	206.42
	Ave Wt @ Wk 16	Ave Wt@ Wk 16
Miles City	193.06 (10.3 %)	198.36 (11.2%)
Telehealth	201.82 (9.3%)	196.27 (4.9%)

Average Weight Miles City - Spring 2010



Average Weight Miles City - Fall 2010



Conclusion:

- ▶ “It is feasible to deliver an adapted group-based DPP lifestyle intervention through telehealth resulting in weight loss outcomes similar to the original DPP.”

--*The Diabetes Educator* June 2010



Positives

- ▶ Improved Access
- ▶ More efficient use of health professional resources
- ▶ Cost Savings



- ▶ Even though an obesity epidemic is plaguing our country, rural access for weight management programs continues to be a sparse at best; Healthy Lifestyle 2010, has allowed me have the education and guidance to put me on a fresh path to new found health and wellness that I can even pass on to my daughter as there is the issue of childhood obesity in our communities, too. I have lost around 50 pounds (my husband has lost around 30 pounds with the program) and having had access to implement this program into my life and now have the knowledge, motivation, and support to continue on my road of weight loss and maintenance. With losing weight in this program I now get up every morning at 5 AM and run for an hour and attend classes at our Rec center in the evening, had you asked me two years ago to get up at 5 AM and exercise I would of said, "Are you crazy?" Colstrip Participant

I thoroughly enjoyed the 2009 healthy lifestyles classes. As an overweight middle aged woman who has participated in every new diet and diet pill that came down the pike this forum did the trick either I was older and wiser but for whatever reason it all made sense to me and I was able to lose the weight and keep it off. Your classes gave me the tools to stay healthy, I do not take blood pressure pills anymore and my heartburn is gone too. I am able to buy off the rack for clothes and that still amazes me. I have more energy and can bend over to tie my shoes and still breathe. Your enthusiasm was very much appreciated.

Sincerely
Baker Participant



Negatives

Negatives



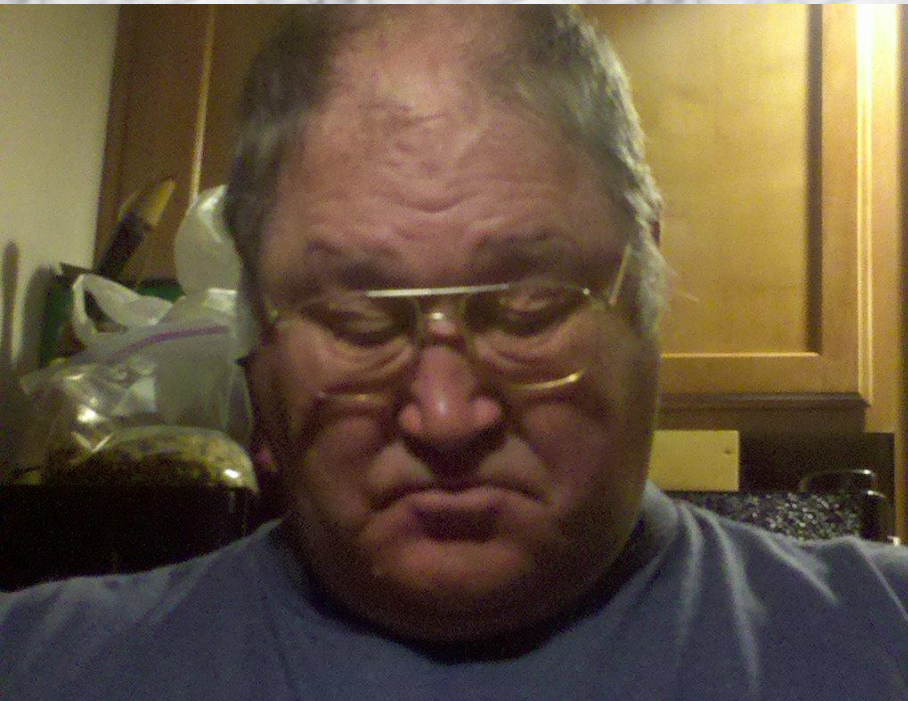
Technology “glitches”

Moral: Have several back-up plans in place





Before and After



We couldn't have done it without..

- ▶ Diane Arave, BS
- ▶ Nahara Borja, MPH
- ▶ Taryn Hall, MPH
- ▶ Todd Harwell, MPH
- ▶ Steven D. Helgerson, MD, MPH
- ▶ Montana Diabetes Project Staff
- ▶ Mark Niebylski, PhD, MBA, MS
- ▶ Sarah Tersegno, MPH
- ▶ Karl Vanderwood, MPH
- ▶ All the other Lifestyle Coaches



The Adventure Continues...



***“Knowing is not enough; we must apply.
Willing is not enough; we must do.”***

--Goethe

